

New Challenges in High-Speed Power Transmission Systems

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David Talbot is an assistant professor in the Department of Mechanical and Aerospace Engineering at The Ohio State University. His research focuses on multi-disciplinary power transmission problems within the aerospace, transportation, wind energy, and industrial gear box industries. His specific research investigations include load distribution modeling of power transmission components, gear, bearing and power transmission system efficiency modeling and measurement, gear dynamics and vibrations, gear manufacturing process simulation, and failure modes of power transmission components. Dr. Talbot is an associate editor for Mechanism and Machine Theory, the chair of the ASME Power Transmission and Gearing Committee, and the chair of the upcoming ASME Power Transmission and Gearing Conference 2022 as part of ASME IDETC 2022.

Abstract

Current advancements in power transmission technology almost exclusively revolve around increase in rotational speed driven mainly by electrification of propulsion systems. This drive introduces challenges in almost all areas of interest in power transmission component research including failure including fatigue, vibration and noise, heat generation, and efficiency. This discussion focuses on these challenges introducing the similarities and importantly the differences between these new challenges and those that have historically been the focus in power transmission research and standardization. The necessity for new multi-disciplinary experimental and theoretical investigations becomes apparent with the above challenges demanding the simultaneous inclusion of disciplines including mechanics of materials, fluid mechanics, dynamics and vibration, heat transfer, tribology, manufacturing and surface engineering, and rheology and chemistry of lubricants. This discussion elaborates on the multi-disciplinary research needed to improve safety, reliability, and overall quality of future power transmission systems.

Thursday, 24 March 2022

12:00pm-1pm

Scott Lab E100

Lunch presentation

Zoom link to be provided to
remote guestsDEPARTMENT OF MECHANICAL
AND AEROSPACE ENGINEERING